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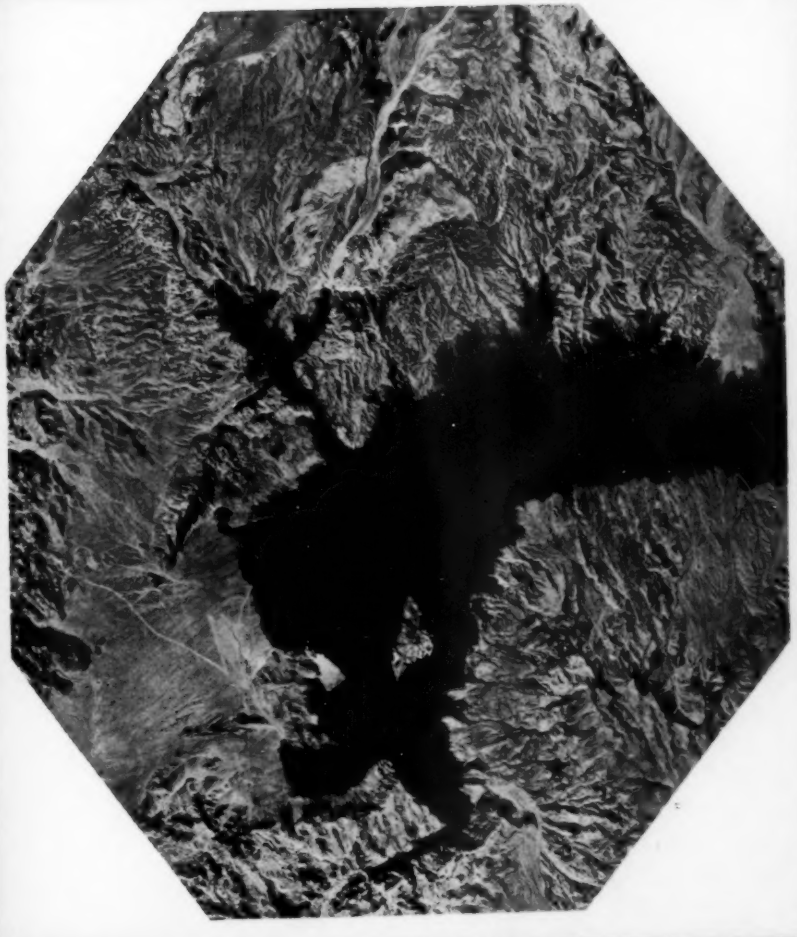
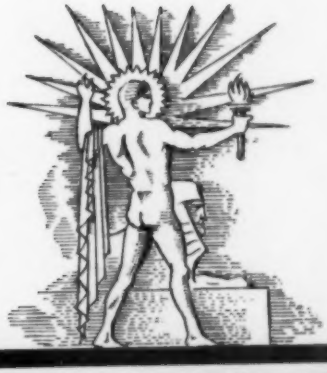
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •





OCTOBER 19, 1935

Man-Made Wonder

See Page 248

A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

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The Weekly Summary of Current Science

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DO YOU KNOW?

Florida is to have a special frost forecasting service from mid-November until April.

Strong winds recently swept the sand off ancient ruins in Michigan, revealing a village of Mound Building Indians.

Beekeepers lose many bees unnecessarily, by failing to make the bees warm and comfortable against winter cold.

A California entomologist has searched the citrus fruit growing belt, almost the world over, without finding any parasite that will keep down the red scale pest.

Muskrats, introduced into California as fur-bearers, are believed to be escaping into Sacramento Valley, where it is feared they may damage levees and irrigation ditches.

Instead of guiding by directions north, east, south, and west, Babylonians oriented maps and buildings according to prevailing winds, which blew in general northwest, northeast, southwest, and southeast.

One-reel extracts from 20 popular moving picture plays have been made for use in character education in schools and churches.

It is time left-handed boys and girls were provided with left-handed class room arm chairs and other equipment, says a high school teacher, himself a left-hander.

A Soviet icebreaker radios discovery of a sign post and some mail left by the Nordenskiold expedition, first to cross the Northern Sea route from Atlantic to Pacific, 1878-1879.

Inexpensive paper windows used in Chinese houses transmit ultraviolet light effectively enough, tests indicate, so that they might be substituted for ultraviolet glass in some tuberculosis clinics.

In dry regions of Hawaii cattle have been known to get along without ordinary water supplies for months, getting moisture only from succulent plant leaves, dew and rain on leaves, and occasional small pools after a rain.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

AGRICULTURE

What effect is chemical research likely to have on crop control? p. 246.

ANTHROPOLOGY

From what land can Scotsmen trace their origin? p. 249.

How is Dr. Hodge to be honored? p. 249.

ARCHAEOLOGY

What household conveniences were known to the kings of Mari 2200 years B.C.? p. 249.

ART

What new value has tissue paper in art? p. 247.

ASTRONOMY

How many asteroids are visible through the largest telescope? p. 244.

Who was once said to have observed men on the moon? p. 253.

BOTANY

Did the Aztecs have a science of medicine? p. 250.

CHEMISTRY

What challenge does the sea hold for future scientists? p. 252.

ENGINEERING

In what laboratory are problems of canals on the Mississippi being studied? p. 243.

FORESTRY

Can a forest be healthy in a dry region? p. 254.

GEOGRAPHY

What effect has rain in South America on our wax supply? p. 245.

MEDICINE

In what percentage of cases is whooping cough vaccine a successful preventive? p. 248.

What clue to approaching lead poisoning may be found in the blood? p. 247.

Which is more important, prenatal care or care at childbirth? p. 244.

Which of the proposed vaccines for infantile paralysis holds the most promise? p. 245.

MENTAL HYGIENE

Why do children fail? p. 243.

PHOTOGRAPHY

Of what territory is the world's largest photographic map? p. 245.

PHYSICS

What appropriate gift was presented to Prof. Bohr on his 50th birthday? p. 246.

What effect has temperature on neutrons in radioactivity bombardments? p. 249.

PUBLIC HEALTH

Are Ethiopia's diseases present in the United States? p. 244.

What factor is more important than money in the control of malaria? p. 248.

What great medical success has been reported from Sweden? p. 254.

What is pulmonary asbestosis? p. 249.

VOLCANOLOGY

Where do the Hiatit Ootam live? p. 246.

MENTAL HYGIENE

Public Health Workers Plan Campaign on Mental Diseases

Will Start Drive With Children Because Mental Disease Is Usually Acquired During Childhood They Explain

PUBLIC health workers are lining up their forces for a fight to the finish on mental illness. Those valiant disease fighters who have brought under control such foes of mankind as smallpox, typhoid fever and diphtheria, laid plans at the meeting of the American Public Health Association for the attack on mental sickness, which fills half the hospitals beds in the country.

The drive will start with efforts to promote mental health in children. School physicians and teachers hold the key positions, it appears. Mental disease, it is agreed by mental hygienists, is mainly acquired in childhood, Dr. A. O. DeWeese, director of health at Kent (Ohio) State Normal College, stated.

"It is a family disease," he continued, "in the same sense that tuberculosis was a family disease in that some adult has communicated it to the child by prolonged and repeated exposure during a period of weak resistance."

Since it is agreed that mental patterns are laid down in childhood, the prevention of mental disease becomes a problem of leadership and guidance on the part of psychiatrists in the schools and home, he pointed out.

From one-tenth to one-half of mental maladjustments are perhaps preventable, Dr. Frederick L. Patry, psychiatrist of the New York State Education Department, pointed out.

Dr. Patry presented a ten-point program for the guidance of health officers and school physicians in their drive to prevent mental disease.

One point is that the school physician should pay special attention to every child who is failing at school, who is a misfit in the group, or who is unhappy and protesting his unhappiness with "nerves."

"No child wants to fail," Dr. Patry declared, "Failure means only one thing: that someone has blundered; someone has failed to show the child off to advantage on his own level of ability to succeed."

Another of Dr. Patry's ten points related to the importance of the home. This is the most important educational institution of society with respect to mental health, he said. Every effort must be made to see that every child has this part of his birthright guaranteed.

"If the start of life's journey is well prepared, we have little fear of maladjustments later on, although it must be kept in mind that human machinery may go awry at any point along the life span," he said.

Science News Letter, October 19, 1935

MAN-MADE RIVERS

Glass walls on the side of the new experimental flume of the University of Minnesota enable hydraulic engineers to study water flow typical of rivers, canals and other open channels. Prof. L. G. Straub, engineering experiment laboratories, is shown above observing water levels in flow over a sharp obstacle.

ENGINEERING

Canal System Studied In New Hydraulic Laboratory

WATER flowing through glass-walled channels in the hydraulic laboratories of the University of Minnesota is aiding engineers to determine the stability of sand dams being constructed in connection with the canalization for navigation of the Upper Mississippi River.

The sixty-foot long experimental flume has glass on the sides and bottom through which hydraulic engineers observe swirls, eddies and flow conditions with a wide range of water velocities and depths.

High water and flood conditions can be simulated by the equipment, explains Prof. L. G. Straub of the engineering experiment laboratories, under whose direction much of the hydraulic research is being carried out.

"Instantaneous closing gates as well as head-regulating gates are arranged at both ends of the channel, thus providing the possibility of studying a large variety of flow phenomena. The arrangement allows for the simulation of flow conditions in canals and rivers, the effect of abrupt or gradual gate opening at ship locks, and the like.

"The introduction of coloring mat-

ter into the water at various points along the stream assists materially in studying flow conditions.

"The channel is provided with a sediment-intercepting basin at the discharge end so as to allow for observations of the erosion, transportation, and deposition of sediment by flowing water.

"Although the apparatus is quite new, a number of investigations have been made therein which indicate the variety of tests which are possible. These include studies of the stability of the sand dams being constructed in connection with the canalization for navigation of the Upper Mississippi River, the design of flood regulating works for various hydroelectric developments, experimental investigation of the mechanics of the hydraulic jump, hydraulic bore, waves of various types, and the like."

Science News Letter, October 19, 1935

ASTRONOMY

New Hubble Asteroid Is Not In Usual Path of Planets

STILL another fragment of what may be a shattered planet which once traveled around the sun in an orbit between Mars and Jupiter has been found by observations of Dr. Edwin P. Hubble of Carnegie Institution's Mt. Wilson Observatory. The previously unknown astronomical object, found on photographic plates taken by Dr. Hubble in the course of other astronomical investigations, is an asteroid: a tiny planet whose diameter is probably from ten to a few hundred miles.

Ordinary asteroids are not particularly interesting to astronomers. Orbits on some 1,300 of them are known, and estimates place the probable total number which could be photographed with a great telescope like the Mt. Wilson 100-inch at perhaps 40,000.

Asteroids and minor planets are so common, in fact, that most astronomers agree with the late Professor Weiss of Vienna, who used to speak of them as "the vermin of the sky." The total mass of all the "vermin," if they were lumped together, would make a planet less than 800 miles in diameter.

Dr. Hubble's asteroid, however, has one characteristic, strikingly different from the other 1,300, which attracted his attention to it.

Not in Same Plane

The Hubble asteroid, instead of going round the sun pretty much in the same plane as the earth and other planets do, was found to be moving in an orbit whose plane is inclined at nearly 39 degrees to the ecliptic. Only one asteroid is known to have a larger inclination: Hidalgo, with an inclination of 43 degrees.

It was this surprising feature of the new asteroid which attracted Dr. Hubble's attention.

Most plausible of all the theories advanced to account for the origin of asteroids is that of Sir James Jeans, British astronomer who is research associate of the Carnegie Institution.

Sir James suggests that the gravitational pull around each planet produces a "danger zone" around it. Another astronomical body approaching too closely to such a zone may be literally pulled apart. Originally there may have been a small planet, between Mars and Jupiter which came into some danger zone, probably that of Jupiter, and began breaking up in consequence until now nothing is left of it but tiny fragments, the asteroids.

Science News Letter, October 19, 1935

PUBLIC HEALTH

Disease Hazards of Africa Also Menace United States

MANY of the tropical diseases which may prove the Number One enemy of the Italian army in Ethiopia are a serious hazard to life and health right here in the United States. A warning to physicians and health officers even in cities as far removed from the tropics as Milwaukee, to be on the alert for cases of these diseases was sounded by Dr. M. Fernan-Nunez, of Marquette University School of Medicine, at the meeting there of the American Public Health Association.

Patients suffering from malaria, relasping fever, dengue fever, and from the parasitic worms of the tropics are to be found in cities all over the United States. Tapeworms, liver flukes and malaria parasites taken from patients in Milwaukee were shown by Dr. Fernan-Nunez in an exhibit on tropical diseases which received a certificate of merit from the Association's committee on scientific exhibits.

The tiny liver fluke which Dr. Fernan-Nunez showed under the microscope is the same disease-producing parasite that defeated Napoleon's men in Egypt, Dr. Fernan-Nunez pointed out. Malaria, which has already claimed a war correspondent in Ethiopia, is reappearing in northern American cities as a result of the increase in decorative rock gardens. This disease, one of the white man's chief enemies in the tropics, kills five million people every year throughout the world, a number equivalent to the entire population of Ireland, Dr. Fernan-Nunez commented. Over three hundred million people suffer from it annually.

Raw hamburger and raw fish are another source of danger, since they may harbor tapeworms. These and other worms which scientists classify as parasites cause more disease and deaths every year than the group of organisms known as bacteria, which are responsible for diseases like pneumonia, tuberculosis and diphtheria, Dr. Fernan-Nunez said.

Science News Letter, October 19, 1935

MEDICINE

Questions the Value of Care Before Childbirth

A QUESTION as to the relative importance of prenatal care for the expectant mother was raised by Dr. Margaret Tyler, Yale University medical school professor, at the meeting of the American Public Health Association.

Obstetrical care at the time the child is born may play by far the greatest part in improving the outcome for the mother, a survey reported by Dr. Tyler indicated. Groups of patients receiving contrasting amounts of care and supervision during pregnancy but attended at childbirth by the same obstetrician were studied.

The outcome at labor was strikingly similar for the contrasting groups, revealing no definite superiority on the part of those who had the more extensive care, Dr. Tyler reported.

The better prenatally cared for group was found to include an excess of complications of pregnancy, many of which had apparently prompted the seeking of extra care. This same group revealed an excess of complications of labor, the ratio of which to those in the poor-care group did not appear to have been markedly altered from the ratio noted in pregnancy.

Science News Letter, October 19, 1935

MEDICINE

Value Of Infantile Paralysis Vaccine Held Doubtful

Brodie-Park Method Termed Safe But of Uncertain Value; Kolmer Vaccine May Even Cause the Disease

VACCINATION of children against infantile paralysis by present methods is of little or no value in protecting the children from the disease. One type of vaccine may not even be safe.

This is the opinion expressed by Dr. Thomas Rivers of the Rockefeller Institute, New York City, and Dr. James P. Leake of the U. S. Public Health Service, at the meeting of the American Public Health Association. These two authorities discussed reports of infantile paralysis vaccination presented by Drs. Maurice Brodie and William H. Park of the New York City Health Department Laboratories and Dr. John A. Kolmer of Temple University, Philadelphia.

The Brodie-Park vaccine was characterized as safe but of doubtful value in protecting children from the dread paralytic disease.

Dr. Kolmer's vaccine was described as being dangerous and of doubtful value. "I don't believe Dr. Kolmer's vaccine is safe," Dr. Leake declared. Dr. Kolmer himself admitted that eight persons given his vaccine subsequently developed infantile paralysis. He believes this is because they had already become infected with the causative virus before given the vaccine. Dr. Rivers, however, disagreed, basing his opinion on study of the reports of the cases, time of exposure and also on the type of vaccine used.

Dr. Kolmer's vaccine is prepared from the infantile paralysis virus by passage through monkeys, and other treatment a process which he believes reduces the infective property of the virus, leaving it capable of stimulating the body's natural defensive forces to resist the disease. This method of weakening the virus has not been proved to be safe, in the opinion of Dr. Rivers and of Dr. Simon Flexner, former director of the Rockefeller Institute. The safety of such a weakened virus is assumed but not proved, Dr. Rivers stated.

The Park-Brodie vaccine is prepared from killed virus. It is safe, apparently, but Dr. Rivers questions its protective value. However, he hopes that this safe vaccine will be tried on a large number of children so that its value or lack of effectiveness may be determined beyond doubt. Dr. Brodie explained later that he and Dr. Park expect to continue their work for at least another year. They believe that their vaccine gives susceptible children a small amount of resistance to the disease and they hope this amount is enough to "give them a boost" that will see them safely through one or two exposures to infantile paralysis, by which time they may acquire the natural resistance to the disease that many children have without any vaccine.

Science News Letter, October 19, 1935

GEOGRAPHY

Wax-Seeking Expedition to Fly Over Sea and Jungles

WAX for polishing floors and furniture will be the Golden Fleece of an expedition that started from Florida on Oct. 1, by amphibian plane for the jungles of Brazil. Carnauba wax, the product of a South American palm, is the basic ingredient of all high-grade polishes. Because of increased rainfall in the district which has always been the main source of supply, less and less of this wax has been coming on the market during recent years, and manufacturers are becoming concerned.

For this reason the expedition, headed by H. F. Johnson, Jr., president of one of the larger wax and polish firms, is undertaking the flight, to seek new sources on several of the principal tributaries of the Amazon. A twin-motored Sikorsky is being used, and the flight will total over 20,000 miles before the expedition returns.

In addition to seeking new stands of carnauba palms, the expedition will gather data for the Field Museum of Natural History, Chicago. The personnel includes a botanist, Dr. B. E. Dahlgren, of the Field Museum Staff.

Science News Letter, October 19, 1935

PHOTOGRAPHY

Largest Photo Map Shows Whole of Connecticut

THE WORLD'S largest photographic map, showing every square inch of the 5,004 square miles in the State of Connecticut, will go on display on October 2 at the Tercentenary Industrial Exhibition.

The huge wall map contains 34 large composite prints derived from 10,479 exposures taken by the 43rd Division Air Service, Connecticut National Guard, using new Fairchild aerial mapping cameras. The planes cruised above the state at an altitude of 11,400 feet photographing approximately three and one quarter square miles of territory at each exposure.

The scale of the map will be 1,200 feet to the inch. To study detail, spectators will stand back from the map and view it with field glasses and be able to pick out landmarks in their own localities.

Science News Letter, October 19, 1935

The word coffee is traced to a city in Ethiopia, called Kahfeh.

WORLD'S LARGEST MAP

Observers use field glasses to examine this photographic map of Connecticut, which is 18 feet across the bottom and 13 feet high, including 234 square feet.

VOLCANOLOGY

Scientist Braves Desert to Study 200 Extinct Volcanoes

EXPLORING one of the most extensive volcanic areas in North America, Dr. Nicolai Kerensky, Russian scientist, is now charting more than 200 extinct craters along the Gulf of California. The region is 300 miles southwest of Tucson, Ariz., and lies partly in the United States and partly in Mexico.

"Besides mapping this virtually unknown country, I am going to study these eruptions as an example of the cooling of the earth's crust," he reported before he left Tucson. "I hope also through excavations and the study of the Hiatit Ootam, a vanishing tribe of Root Eaters, to trace the history of man, both past and present, in this sun-seared land."

The region is exceedingly dry. It is uninhabited except for about twenty of the Hiatit Ootam, who live on the roots of the bistatk, a parasite of the *Coldenia* shrub, which will grow in the sand with only two or three inches of water a year. The trip is therefore a dangerous one. Six persons have become lost and died there of thirst during the last five years. The tinajas, the water holes, are far apart and often dry. The heat is also excessive, the temperature averaging 110 degrees Fahrenheit.

On a previous expedition three years ago Dr. Kerensky mapped the Amphitheater, a huge crater which measures a mile across and a fourth of a mile deep, and some eighteen other smaller cones. He also charted several lakes of lava and a "frozen" river which is a half mile wide and eight miles long.

He estimates that when this land was in eruption, the earth tremors shook California, Utah, Arizona, New Mexico, Western Texas and the West Coast of Mexico. The area extends for 200 square miles.

The craters have been the Mecca of the Papago Indian religion for many centuries, the Indians believing that Iitoi, their principal god, lives on one of the peaks. They have made pilgrimages to the region since time immemorial and carried salt back from the nearby deposits to exchange with other tribes.

The only other scientific expedition to enter the country was when Dr. William T. Hornaday led a party in 1911 which mapped Pinacate crater, the largest of the 200. It is more than two miles in diameter and 1,000 feet deep.

Science News Letter, October 19, 1935

AGRICULTURE

Crop Control Of the Future Will Strive For Increase

WHILE potato growers have been making known their wishes for smaller crops and larger profits, despite an apparent reluctance on the part of the AAA, chemical industry is looking forward to a time when a controlled agriculture will be adjusting its production in the opposite direction, in order to feed factories that will be even hungrier for corn and cotton than pigs and people are.

A glimpse of this coming alliance between industry and agriculture was given at Cornell University by L. F. Livingston, president of the American Society of Agricultural Engineers.

Speaking of the AAA program, Mr. Livingston said, "It was a situation without precedent, yet such was the emergency that something of the sort was mandatory to check the economic collapse of one-half of the people."

But the emergency phase of crop reduction to prevent ruinously low prices for farm products is already passing, he continued. The tide is setting the other way, thanks largely to the need of industrial plants for raw materials from the land, to be worked up into manufactured goods through the processes of organic chemistry. And new chemical inventions now in the experimental stage will increase this demand many fold, doing all sorts of things, from building roads out of cotton to making "dry ice" out of by-products of the industrial fermentation of corn.

Even now, more than ten per cent. of the corn crop has as its market the factory, Mr. Livingston said, and "uses for corn are being urged that, if adopted, would consume the entire present crop without leaving one ear for one Iowa hog."

Research the Key

Scientific research, the speaker indicated, is the key to the chemical hook-up between industry and the farm of the future. The great industrial firms are bringing their research resources to bear on farm problems, joining forces with the research work of Federal and State governments, which have long been in the field. The industrialists are doing this because they realize that the farmer is not only a prime source of raw materials for their plants but also because it has become inescapably evident that the great farm market is indispensable to a stable industrial prosperity.

"We are in the early dawn of a new golden era in agriculture. The first signs of that dawn are already streaking the sky."

Science News Letter, October 19, 1935

PHYSICS

Radium Given to Bohr to Honor his 50th Birthday

AS A GIFT upon his fiftieth birthday, Prof. Niels Bohr, leading Danish scientist, one of the creators of the new physics and Nobelist, was presented one hundred thousand kroner ($22,500) for the purchase of half a gram of radium. The precious element will be used by Prof. Bohr in his private scientific research upon the constitution of matter.

Eight industrial firms and ten scientific foundations of Denmark joined in making the gift to Prof. Bohr.

Radium constantly disintegrates and shoots off powerful atomic projectiles and rays. Prof. Bohr will use these in bombarding the atoms of various elements to discover how they are put together.

Colleagues in science from all over the world sent messages of congratulation to Prof. Bohr.

"Original researches like those of Bohr are a bulwark against the destruction of our culture by fanaticism," Prof. Albert Einstein wrote from America.

"Bohr's achievements are epochmaking and have had an outstanding effect on the advance of physics," Lord Ruth-

erford of Cambridge University, England, said.

Prof. Werner Heisenberg, German physicist, said: "The Bohr Institute is the world center of modern atomic research."

Prof. Max Planck of Germany wrote: "Bohr's research has given a new turn to scientific evolution."

Prof. Georg von Hevesy, German discoverer of the chemical element hafnium, commended Bohr's warm personality and declared him to be a "historical phenomenon" as a thinker.

The co-discoverer of artificial radioactivity, Mme. Irene Curie-Joliot, also daughter of the isolators of radium, wrote from Paris: "Bohr is one of the great masters of theoretical physics."

Science News Letter, October 19, 1935

ART

Delicate Art Works Copied By New Four-Cent Process

BEAUTIFUL sculptured art works, that never before could be reproduced for fear of damaging the delicate surface, can be copied safely by an ingenious and inexpensive new process.

The process, devised by Lamont Moore of the Newark Museum staff, has been successfully tried first in making a cast of a famous ancient Indian sculpture, the head of a Mayan corn god belonging to Peabody Museum, Cambridge, Mass.

Knowing that beautiful colors painted on the corn god's image would be ruined if ever oil or grease were applied, as is necessary in making an ordinary plaster of Paris mould, Mr. Moore determined to find a way to produce the copy that his museum wanted for exhibit.

His process, evolved after many experiments, is to stretch several layers of ordinary paper handkerchiefs over the surface to be copied. Over this soft layer, which protects and fits to the sculptured contours, he criss-crosses narrow gummed paper until three layers of the gummed strips have been built up over the features, forming a perfect mask. The mask is lifted from the sculpture, and greased, shellacked, and plastered in preparation for use as a mould.

Cost of making such a mould, Mr. Moore finds, is only about four cents, and some 15 reproductions can be cast from it. An experienced worker can make a mould by this process in eight hours or less.

Science News Letter, October 19, 1935

MAKING A MASK

Lamont Moore, of the Newark Museum, demonstrates his method of copying delicate art works in the inexpensive medium of tissue paper.

MEDICINE

New Blood Test Reveals Approach of Lead Poisoning

A TEST which shows the approach of lead poisoning before the disease has actually developed was reported by Drs. Carey P. McCord and F. R. Holden and Jan Johnston of the Industrial Health Conservancy Laboratories, Cincinnati, to the American Public Health Association.

The test is particularly valuable in protecting industrial workers who are exposed to lead in the course of their work. By means of the test, which is called the basophilic aggregation test, the physician can tell whether or not lead poisoning is the early prospective lot of the individual being examined.

"In this test," Dr. McCord explained, "counts are made of embryonic blood cells which in normal persons rarely exceed one per cent. of the total number of red cells in the blood, but which in the case of lead poisoning may amount to much higher percentages, such as 4, 6 or 10 per cent."

An extensive lead poisoning epidemic which took place in the automobile industry in 1934 and 1935 provided an opportunity for evaluating the new diagnostic procedure. In this epidemic 8,000 tests were made with results more than 95 per cent. accurate.

The epidemic resulted from the use of metallic lead in automobile body production, it was explained.

Lead in the form of dust and fumes was inhaled by exposed workers, with the result that many hundreds were injured by this industrial intoxication. The total number of persons either affected with clinical lead poisoning or who evinced evidences of lead absorption is not known for the entire industry, but it has been set approximately at 4,000.

This epidemic of lead poisoning has led to many changes in manufacturing processes in order to obviate repetition of this occupational disease outbreak. Already in many automobile plants control appliances and practices have been installed sufficient to make unlikely any large number of poisoning cases during the approaching automobile manufacturing season.

Science News Letter, October 19, 1935

MEDICINE

Whooping Cough Vaccine Prevents But Doesn't Cure

WHOOPING-cough vaccine is of questionable value as a cure for the disease, but when given to non-immune children sufficiently long before they are exposed it should protect nine out of ten of them.

This summary of the vaccine's status was presented by Dr. Louis Sauer of Evanston, Ill., to the American Public Health Association.

The best age at which to vaccinate children against whooping cough is between six months and one year of age, Dr. Sauer said. Children over three years of age probably should be given a slightly larger dose of vaccine to protect them.

Although the protective action of the vaccine seems established, much still remains to be learned about it, Dr. Sauer indicated. Some of the factors about which little is known are what causes the failures in 10 per cent. of the cases; the importance of recently isolated strains; the best method of standardization; the importance of refrigeration; the youngest age at which active immunization against whooping cough is possible; and the best sequence in which to give whooping cough vaccine, smallpox vaccine and diphtheria immunization.

Science News Letter, October 19, 1935

PUBLIC HEALTH

Propose An Institute of Industrial Medicine

A NATIONAL institute of industrial medicine to protect the health of American workers was proposed to the American Public Health Association by Dr. Henry H. Kessler, medical director of the New Jersey Rehabilitation Commission. The working group must not be looked on as a special class, Dr. Kessler said, for today it forms the larger part of our entire population, and since the mechanization of agriculture includes the farmers of the country. The average worker lives six or eight years less than the average member of the population, Dr. Kessler pointed out in calling attention to the need for special means of protecting this important class.

The institute, as Dr. Kessler outlined it, would have a four-fold function. It would promote research in industrial diseases. It would sponsor a campaign to teach the worker how to protect his own health. It would sponsor legislation for the protection of the worker and develop standards of industrial health.

An important function of such an institute would be the creation of a panel of qualified medical and non-medical experts who could be called on in litigation over industrial diseases, compensation cases, and the like, thus correcting the present abuses in law cases involving occupational disease.

The proposed national institute of industrial medicine is in line with the present trend of governments assuming more and more responsibility for the protection of life and health of individual citizens, Dr. Kessler pointed out.

The two chief occupational diseases, he said, are silicosis in the dusty trades, and skin diseases from exposure to irritating chemicals in various industries.

Science News Letter, October 19, 1935

PUBLIC HEALTH

Public Health Workers Lauded For Service

HOWEVER disappointed John Taxpayer may be with the quality of service given him by public officials and employees, he has no cause for complaint against public health workers. Praise for these public servants was given by Dr. W. W. Bauer of the American Medical Association at the meeting of the American Public Health Association.

"There is a great disillusionment abroad in the land with respect to public service," Dr. Bauer stated. "That this is without foundation for the great majority of public health workers, I am convinced," Dr. Bauer declared.

Ways in which community organizations can be interested in the official health program were discussed by Dr. Bauer, who is director of the medical association's bureau of health and public instruction.

The program itself must be worthy of interest, aside from publicity techniques for popularizing it, Dr. Bauer said. The health official and his whole department must work at their jobs of protecting the public health, if they wish to win the interest and support of community organizations, he continued.

Popular appeal, practicability, economy and timeliness were stressed as important qualifications of the health program. As examples of health projects easy to establish because they had these qualifications, he cited infant hygiene, diphtheria and smallpox immunization, and certain types of sanitary work which abolished or mitigated disagreeable nuisances.

Science News Letter, October 19, 1935

IN SCIE

PUBLIC HEALTH

Time More Than Money In Tropical Malaria Control

CONTROLLING malaria in the rural tropics is more a matter of time than of money, Dr. Paul F. Russell of the Rockefeller Foundation's International Health Division told the American Public Health Association.

Continuity of effort rather than perfection is required, Dr. Russell pointed out, basing his remarks on malaria control work in the Philippines.

In these islands malaria is a disease of the foothills, but not, he emphasized, of the coastal swamps, the lowland plains, the rice fields or the mountains above 2,000 feet.

The chief mosquito carrier of malaria in the Philippines, unlike the malaria mosquitoes elsewhere, breeds mostly in small streams where the water is fresh, flowing and slightly shaded. The Philippine malaria mosquito never breeds in salt water, rice fields or in swamps.

Sluicing, salting, intermittent irrigation and shading are among inexpensive, natural methods by which Dr. Russel believes malaria may be controlled in the Philippines. Because malaria regions there are poor in money but rich in time, Dr. Russell explained that speed and perfection are not to be expected but continuous effort along the inexpensive lines he drew will bring malaria under control, he believes.

Science News Letter, October 19, 1935

ENGINEERING

Boulder Dam Lake Looks Like Giant Crystal Mass

See Front Cover

THROUGH the ten eyes of the Fairchild compound aerial camera, the territory about Boulder Dam and lake looks like a mass of interlocked and growing crystals.

The picture shown on the front cover of this week's SCIENCE NEWS LETTER includes more than 200 square miles of territory, taken from a considerable altitude. The dam itself shows as a minute semicircle across the dark finger of water in the center foreground.

Science News Letter, October 19, 1935

FIELDS

ANTHROPOLOGY

Fellow Scientists to Honor F. W. Hodge

FELLOW scientists are planning a signal honor for Dr. Frederick Webb Hodge, anthropologist and director of the Southwest Museum, who celebrates completion of fifty years of research on America's prehistory, in 1936.

A publication fund is to be created, bearing his name, for the purpose of publishing selected works on American anthropology. A committee of sixteen anthropologists is sponsoring the project, which will do personal honor to Dr. Hodge and at the same time increase meager existing facilities for publishing research on American prehistory.

Dr. Hodge's career goes back to 1886, when he joined an archaeological expedition to Arizona. He headed the Bureau of American Ethnology for eight years, and edited the Bureau's well-known "Handbook of American Indians North of Mexico."

Science News Letter, October 19, 1935

PUBLIC HEALTH

Lung Disease Increases With Asbestos Industry

A SERIOUS public health problem, pulmonary asbestosis, has arisen in recent years as a result of the four-fold increase in the manufacture of asbestos products. The health hazards of the asbestos industry were pointed out by Dr. J. Connolly, Huntersville, N. C., to the American Public Health Association.

Lack of protection from the inhalation of asbestos dust has been the cause of the disability of many workers, Dr. Connolly said. Among X-ray films of 151 workers in asbestos mills, 52 films showed definite evidence of lung disease.

Of the 151 workers, 86 had worked in the industry for periods varying from four to twenty years. In this group were found 51 of the positive cases of asbestosis, a percentage of 59.3. Only one case with positive X-ray evidence of asbestosis had worked in the industry less than four years. The positive cases were 34.4 per cent. of the total 151.

Five films of this series showed a healed tuberculosis with no asbestosis, and three showed a healed tuberculosis complicated by asbestosis, Dr. Connolly reported. These workers had spent from four to ten years in the industry. There was no evidence that their work tended to re-activate their tuberculosis lesions.

Asbestosis is a slowly progressive condition after it is once acquired, even though there has been cessation of exposure to the dust for extended periods.

Science News Letter, October 19, 1935

PHYSICS

"Cold" Neutrons Produced By Liquid Air Chilling

"COLD" neutrons, cooled to the temperature of liquid oxygen at 130 degrees below zero Fahrenheit, are the latest means of scientists to increase the efficiency of artificial radioactivity bombardments in the laboratory.

Temperature profoundly changes the ability of the newly-discovered neutron particles to cause radioactivity when they are used as atomic bullets, Dr. P. B. Moon told the British Association for the Advancement of Science.

Artificial radioactivity produced by atom bombardment causes the atoms of the struck element to give off beta and gamma rays like those which come spontaneously from the naturally radioactive elements like radium and thorium.

Discoveries of ways to increase the efficiency of the artificial radioactive effect by neutron bombardments have been several and rapid.

It is now known that if the neutrons can be slowed up by passing them through paraffin-wax and water before they impact on the element being activated, the radioactive effect is increased. Much energy is lost by bringing about this multiple bumping about in hydrogen-containing materials, but the final result seems to be that after being slowed down the neutrons are much more efficient in transferring their remaining energy to the atoms of the target.

The suggestion has been advanced, Dr. Moon pointed out, that the neutrons might be so slow that they had only energy equivalent to the ever-present thermal agitation of the material through which they were going. If this were so, the efficiency of the neutrons as radioactivity producers should depend on their temperature.

Dr. Moon reports that this effect has been definitely shown by experiments wherein the artificial beta ray activity of silver was increased some 30 per cent. if the neutrons producing it are cooled to the temperature of liquid air.

Science News Letter, October 19, 1935

ARCHAEOLOGY

Grand Palace of Mari Being Explored in Syria

RUINS of a huge and elaborate palace, twice burned by invading armies from Babylon, have been partially unearthed at Mari, Syria, by a French expedition sent out by the Louvre Museum.

Sixty-nine palace rooms have been found. Marks of fires set by torches of King Hammurabi's Babylonian soldiers, some 2200 years before Christ, are plentiful throughout the ruins. Despite flames and plundering, the palace abounds in evidence assisting archaeologists to reconstruct the story of a once wealthy but today little-known kingdom. Names of several kings of Mari have been discovered.

The expedition found kitchens, baths, two schoolrooms, a throne room, and other rooms still containing articles used by the king and his court.

Science News Letter, October 19, 1935

ANTHROPOLOGY

First Scots May Have Come Out of Spain

THE EARLIEST Scotsmen were of Iberian stock, coming from Spain, and it is from them that the remarkable qualities of the Scottish people have been chiefly inherited.

This suggestion has been proposed to British scientists by J. F. Forbes, archaeologist.

Mr. Forbes bases his view on extensive examination of the numerous "megalithic circles" — prehistoric temples made of large blocks of stone set in a circle—found in Scotland. Similar circles have been found in Spain, western France and Brittany. From this and other clues, Mr. Forbes argues that ancient Caledonians who started to settle in Scotland — coming via Ireland — about 4,000 years ago, had earlier migrated from Spain and were definitely of the Iberian (dark-complexioned Mediterranean) race.

Near some of the megalithic circles he has found single stone pillars bearing inscriptions resembling insignia of the ancient sun-god worship in Babylonia and Assyria. Comparing these symbols and their literature, he finds reason to believe that originally the Iberians inhabited Western Asia, gradually migrating to Spain by way of North Africa, and taking with them much of a high prehistoric culture.

Science News Letter, October 19, 1935

BOTANY

America's Earliest Herbal

Written in Aztec by an Aztec and Translated Into Latin by Another, It Tells About Native Plants

By DR. FRANK THONE

FOR MANY, many years, in a quiet alcove in the great Vatican Library in Rome, there reposed a little book, hand-written with a quill pen, bearing on its pages many pictures of plants, a bit odd-looking but astonishingly bright-colored and clear, considering the age of the volume. For the closing sentences on the last page announced that it had been completed on the feast of St. Mary Magdalen in the year 1552.

Nobody paid a great deal of attention to the book. It was not a rarity, to all appearances: manuscript volumes four centuries old are as common as sparrows in the Vatican Library, and the librarians are busy men. They gave it a curt name and a number: "Codex Barberini, Latin 241" and turned to their next indexing job. A few scholars, browsing, looked at it with mild curiosity once in a while, but for the most part the only times it got touched was when a caretaker came along with a dustcloth.

Such seeming neglect, however, was only serving the uses of destiny. For thus it came to pass that the first thorough study of the book was made by an American; appropriately, since it is one of the earliest books ever written in the New World, and so far as is known the very earliest that is entirely an American product. It was written about the ancient medical and herbal lore of the Aztecs—written by two Aztecs who had been educated in the first American college founded especially for the benefit of Indians.

Photographed Page by Page

The American who "discovered" the book, who first knew it for the real treasure it is, was Dr. Charles U. Clark. He was on a library-exploring expedition, hunting for manuscripts pertaining to early Latin-American history, under the auspices of the Smithsonian Institution, with the support of Ambassador Charles G. Dawes. It was photographed, page by page, and a set of beautiful color sketches copied from its illustrations was made by a French artist, Mme. Missonnier, niece of the pro-prefect of the library. A publication describing the manuscript and its historical background has been prepared by Emily Walcott Emmart of the Johns Hopkins University.

On the basis of the material thus obtained, the Smithsonian Institution has published this description of the book and as much of the history of its making as can be unearthed. For full publication, with illustrations that will do justice to the original paintings, still bright as jewels, a depression budget denies the means. The Institution's secretary, Dr. Charles G. Abbot, hopes to obtain a fund for that purpose later.

But an examination of the photographic copy, and of the preliminary description already published, shows what a treasure of science lay little noticed all these years. It is nothing less than a chief source of information about the medical and plant lore of the Aztec people, preserved elsewhere only in one or two other works written by Europeans.

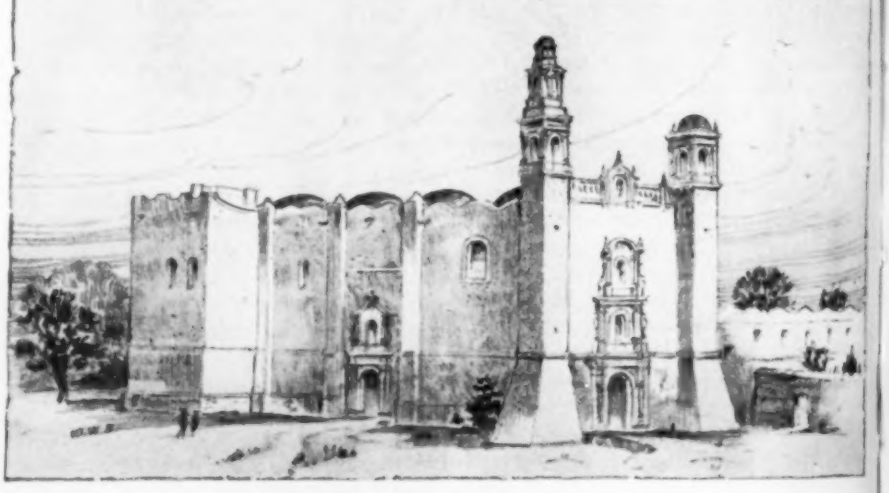
Sought Aztec Knowledge

That the first all-American book should be about medicine and the plants used in its practice is not remarkable. When the Conquistadores under Cortez overthrew the Aztec monarchy and claimed the land for Spain, the respect of the newcomers for the medical knowledge of their Indian subjects was at least as great as their hunger for Aztec gold had been. And although they found no such medical treasures in Mexico as they did in Peru, with its contributions of quinine and cocain, the Spaniards nevertheless did assidiously cultivate both the Aztec medical men and the Aztec medicinal plants. It is worthy of note that in the first college established for the education of selected "sons of Indian gentlemen" the subjects included Latin, Aztec, philosophy, music and *Aztec* (not European) medicine.

College For Indians

Furthermore, there ruled in Mexico, for His Most Catholic Majesty Charles V of Spain, a pair of remarkable men. The first, Don Antonio de Mendoza, desired the development rather than the exploitation of the country, and was wholly willing to give the conquered Indians a fair chance. Accordingly he provided for the erection of their special college, the College of Santa Cruz, in a suburb of Mexico City.

Here Indians as young as twelve years were matriculated, and here they were taught by a remarkable faculty of Franciscan friars. Some of these boys later became rulers of cities and governors of provinces. Most outstanding among the teachers in this college was one Bernardo Sahagun: scientist in medicine, botany and anthropology, linguist in Latin and Aztec, brilliant teacher and encyclopedic



COLLEGE OF SANTA CRUZ

Here, a hundred years before Harvard's first classes, the sons of "Indian gentlemen" were trained in European learning, and in exchange taught their Spanish teachers what they knew about native plants and their medicinal uses.

TLATOCNOCHTLI

(Prickly-pear cactus to you.) With so much cactus growing in Mexico, its use in Aztec medicine was inevitable. The Latin inscription underneath seems to indicate that it is recommended for "dryness" or "heat" of the body.

writer. His accounts of his observations in Mexico are among the best of all source material for historians to this day.

This College of Santa Cruz was founded in 1536, only fifteen years after the Conquest, and exactly a century before the organization of Harvard. It still stands, but is used now as a church.

Young Mendoza a Botanist

By the time the college had been a going concern for about a decade and a half, the elder Mendoza had been transferred to Peru and his son, Don Francisco Mendoza, was in charge in his stead. He inherited his father's interest in good government and education, it seems, and in addition he had one pet project very dear to his heart: the utilization of native plant resources and the introduction of new plants from other lands in the vast Spanish empire.

In the words of an English translation of a contemporary record originally in Spanish: "Don Frauncis De Mendosa, Sonne unto the vise Roye, Don Antony de Mendosa did sowe in the new Spaine Cloaves, Pepper, Ginger and other spices, of those whiche are brought from the Orientall Indias."

This botanically-minded official set aside a sum of money to make possible the assembling and systematic arrangement of the Aztec medical knowledge. A member of the faculty at the College of Santa Cruz assigned the task to a man who must have been one of his prize pupils, an Indian who had been baptized with the Spanish name Martin de la Cruz.

This Martin seems to have been thoroughly learned in the medical-botanical knowledge of his people, and possibly was the artist of the finished book also. But he wrote in his native Aztec tongue. After he had completed his task, the work of translating his manuscript into Latin, for the benefit of educated gentlemen in Spain, was given to another Aztec, one Juannes Badianus. His Latin style is simple, but correct and idiomatic; the friars had certainly done their work well, to make so good a Latinist out of an Indian only one generation removed from the first days of the Conquest.

Courtly Phrases

But is not only the language of the book that shows how well taught its writers had been. They were thoroughly versed in the literary etiquette of their time, as the formal foreword and conclusion show. In the courtliest kind of phrasing they praised their patron, Don Francisco, to the skies, and almost apotheosized "His Holy Caesarian Royal Catholic Majesty," who was also to see the book—and perhaps be moved thereby to renew his generous support of the College.

In phrasing equally ornate they abased themselves in "that we poor unhappy Indians are inferior to all mortals, and for that reason our poverty and weakness implanted in us by nature merit your indulgence." That was not grovelling; it was just good manners, sixteenth century style, as can be read in the foreword of any contemporary European book.

These Aztecs, whose own fathers might have traded blows with the soldiers of Cortez, could even gracefully swing a classical literary allusion, referring to their philanthropic ruler as "my Maecenas." (How many college graduates of today can tell offhand what that means?)

Having done the elaborate courtesies required by good breeding of the "sons of Indian gentlemen," Senor Martin de la Cruz got down to business. He went through the ills that human flesh is heir to in logical anatomical order, beginning at the head and proceeding leisurely to the feet. For each disease he described and pictured the plants used in its treatment—sometimes animal or mineral drugs also, but mostly plants.

He told where the plant is found, in what kind of soil it grows, what part is used, how it is prepared and administered. Names are given only in Aztec—no effort was made to translate them or to Latinize their form. It looks a bit queer to find a sudden tongue-twisting Aztec word, all "xihuitls" and "pocatls," in the midst of easy-flowing Latin; but it is evidence of good sense on the part of both first author and translator, and it is what gives the book today its incomparable value as both scientific and historic document.

No Magic

The superior-minded Nordic who thinks that all "native" systems of medicine are mere jumbles of ignorant magic will have an eye-opening shock on reading Martin de la Cruz's text. There are no incantations, and only a few references to charms. For the most part the remedies are based on hard, common-sense experience. They had been tried, the patient got well, therefore they were good for what ailed you.

The directions are simple and straightforward. Did you have catarrh? Turn to the fourth chapter: "Those troubled with a dripping nose or cold are to sniff the herbs Atochietl and Tzompilihuizxihuitl and help the cold thus." With pictures of Atochietl and Tzompili . . . (well, *you* spell that one!) and descriptions of its habitat.

That formidable Aztec name is apt, after all, if you only understand a little Aztec. Tzompilihuiz means cold-in-the-head. Xihuitl means a green thing, therefore a plant. Cold-in-the-head-plant. What could be simpler?

Or again: "The root of the herb Yztac Pahtli ("white medicine") is to be bruised in a little clear water and the liquid poured into the nostrils drop by drop for those suffering from a headache." If the headache were due to sinus trouble, the remedy might easily have worked very well.

Most of the plants illustrated are hard to identify unless you know the flora of the Mexican uplands pretty thoroughly. But anyone can spot the two kinds of cactus recommended by Senor Martin de la Cruz, and it does not require a professor of botany to identify the pictures labeled respectively Tolohuaxihuitl and Nexehuac. They are two different kinds of jimson-weed or thorn-apple. One has green pods with prickles, the other purple pods without prickles. Both are recommended for pain in the side. And

jimson-weed is still recognized as a pretty good poultice for allaying pain, because it contains the powerful narcotic alkaloid called atropin.

The list of diseases prescribed for is extensive: skin disease, gout, pain in the joints, worms, burns, cracks in the soles of the feet, wounds, and a number of others. It is worthy of note that fear, fatigue and feeblemindedness are looked upon as diseases and treated as such. There is a special chapter on diseases of women, another on the ills of children. Appropriately, the book closes with two pages entitled, "Of certain signs of approaching death."

Although the illustrations are quite naturalistic, so that a good botanist can identify many of them by simple inspection, some traces of the old stylized art of the Aztecs cling to them still. A plant that grows in stony ground will have the Aztec hieroglyphic sign for stone attached to its root tips. Similarly, if it grows in water, the water-glyph is appended. One plant is shown with both stone and water signs at its root-ends—and the text explains that it grows on pebbly creek-beds. In all likelihood, an Aztec could have read a good deal of the book from the pictures alone.

Knowledge of plants and of medicine did not constitute a quasi-secret lore of special professional classes among the Aztecs, as it does with us. An early historian of the Mexican conquest and of the overthrown dynasty that ended with Montezuma, relates that "Montezuma kept a garden of medicinal herbs and the court physicians experimented with them and attended the nobility. But the common people came rarely to these doctors for medical aid, not only because a fee was charged for their services, but also because the medicinal value of herbs was common knowledge and they could concoct remedies from their own gardens."

In setting down his knowledge of Aztec botany and medicine, therefore, Martin de la Cruz was not betraying any secrets of his conquered people, but only generously sharing a democratically distributed learning with white men who had (*mirabile dictu!*) been generous to him.

Science News Letter, October 19, 1935

CHEMISTRY

Research Problem of Future: How to Take Water From Sea

WANT to get gold from sea water? Then learn how to get the water out of sea water. Some cheap process of getting fresh water out of the salty ocean would bring gold to its discoverer and aid the future welfare of millions of people.

This is the statement to Science Service from the man who has been a storm center of controversy since he set scientific tongues wagging 2 years ago over his pronouncement that:

"It is no more impossible to extract gold from sea water now than it was to extract bromine from sea water ten years ago."

That man was Thomas Midgley, Jr., director of the American Chemical Society and vice-president of the Ethyl Gasoline Corp.

The only change in the oft-repeated prediction, Mr. Midgley said, is that the words "ten years ago" must now be changed to "twelve years ago."

The prediction still stands, Mr. Midgley contends, but he adds, "In no way, shape or form does it imply that gold will be extracted commercially from sea water in any given length of time."

Mr. Midgley's statement has consistently been interpreted in the press to mean that gold would be extracted from sea water on a commercially profitable scale within ten years.

"There is a much bigger problem associated with sea water," Mr. Midgley said, "upon the solution of which depends the future welfare of millions of people. This problem is the commercial extraction of water itself from sea water. No one can say that water is present in too small a quantity to be recoverable. The present price paid for water in arid lands for irrigation purposes indicates that the value of the water in sea water is about the same as the value of the bromine at present prices.

"What more enticing research problem could anyone ask for, an unlimited supply of raw materials, an unlimited market with unlimited profits and unlimited benefits to humanity?"

Discussing criticisms of his gold prediction statement, Mr. Midgley said:

"I have little use for the pessimistic viewpoint applied to the future possibilities of chemistry and chemical engineering. A discussion of the economic factors surrounding this problem, based on the best present knowledge, is entirely beside the point. Nor is the amount of gold in sea water particularly pertinent except to establish the difficulty of the problem. With all due respect to the analyses made by Dr. Fritz Haber, I personally incline to the more recent results reported by Mr. L. C. Stewart and Mr. W. H. Dow.

Concentration Varies

"Since Dr. Haber published his analyses, new quantitative analytical methods have been developed and applied. That variations in concentrations exist seems beyond dispute; however, one does not need to locate such a proposed extraction plant at the points of low concentration. Hence the minimum concentrations reported are beside the point. It is only high concentrations that need be considered as pertinent and Dr. Haber himself reported sample concentrations considerably in excess of 2.3 parts per billion.

"From a journalistic standpoint the word 'gold' has a value entirely dissociated from the metal itself and undoubtedly this is the reason why the variety of statements concerning the possibility of obtaining gold from sea water have been so broadly disseminated by the press. I personally have no active interest in this problem."

Comment by Dr. Wichers

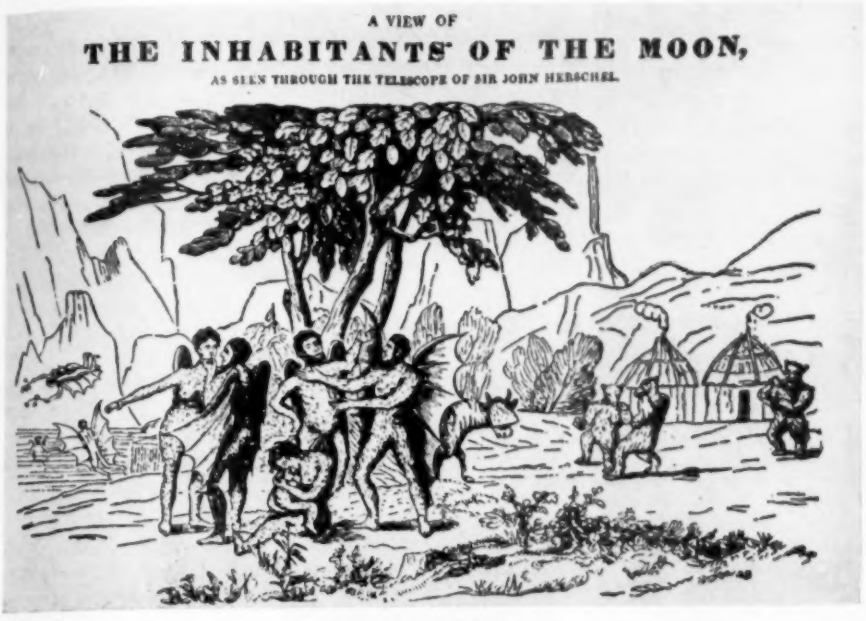
Dr. Edward Wichers, chemist of the National Bureau of Standards in Washington, commenting on Mr. Midgley's statement given above, said:

"The new quantitative methods which are intimated to be the basis of the Dow Company's estimate of 2.3 parts per billion as the gold content of the Atlantic ocean have apparently not been published. Until they are available for scrutiny chemists generally can not be expected to accept conclusions drawn from them, especially since they are so strikingly different from the results of the exhaustive study made by Haber.

"As to the concentrations reported by Haber in excess of 2.3 parts per billion, he found, out of some 5000 samples, 7 which contained from 2 to 8 parts per billion. These were small samples (about 2 quarts). The highest *average* content found in any part of the oceans was only 5 parts in one hundred billion."

Science News Letter, October 19, 1935

To safeguard pedestrians at certain street crossings, British officials are testing use of an "electric eye" device, which would turn traffic lights red when a walker approached the corner and crossed the path of the infra-red beams.



MEN ON THE MOON?

Just one hundred years ago this fall, in 1835, the scientific and newspaper world was aroused over reports that a famous astronomer in South Africa was secretly using a super-telescope so powerful that it could detect living inhabitants on the moon's surface; a race of hairy moon men. This old print depicts what was supposed to have been seen through the wholly imaginary telescope.

ASTRONOMY

Moon Hoax, Newspaper Prank, Now Just a Century Old

By JAMES STOKLEY

JUST a hundred years ago this autumn people in America and Europe were eagerly discussing a strange subject: whether or not there were winged men on the moon! By taking advantage of the reputation of a great astronomer who was in a distant and inaccessible part of the world, a New York newspaper man perpetrated a hoax which even deceived some scientists who should have known better.

It started in the *New York Sun* for August 25, 1835. Nearly the entire front page on that date was devoted to what purported to be an account of "Great Astronomical Discoveries Lately Made by Sir John Herschel, LL.D., F.R.S., etc., at the Cape of Good Hope," reprinted, it was said, "from a supplement to the Edinburgh *Journal of Science.*" It started out with this grandiose opening:

"In this unusual addition to our journal, we have the happiness to make known to the British publick, and thence to the whole civilized world, recent discoveries in astronomy which will build an imperishable monument to the age in which we live, and confer upon the present generation of the human race a proud distinction through all future time. It has been poetically said that 'the stars are the hereditary regalia of man, as the intellectual sovereign of the animal creation.' He may now fold the Zodiack around him with a loftier consciousness of his mental supremacy."

Then it went on, continuing for six instalments on succeeding days, to tell how Sir John had discovered how to make a much more powerful telescope than any ever constructed before, or, for that matter, since! This was supposed to have been done by "a transfusion of artificial light through the focal object of vision." In other words, the image of the distant object, formed in the eyepiece of a telescope, was treated as a real object itself, and magnified by projecting more light into it, and then through the lenses of a microscope! Of course, the idea is ridiculous. The "focal object" is not a real object at all, but is made of light, like a picture on a movie screen, and adding more light to it only blurs it. If the bright lights of a movie theater are turned on during the show, the picture is entirely obliterated.

But using this totally imaginary scientific principle, Herschel was said to have built a telescope with which objects on the moon only a fraction of an inch in diameter could be seen. Animals, like buffalo, antelope, and sheep, were seen, and finally flying men, who were named "Vespertilio-homo," or "bat-men." Some of them seemed to be very intelligent, and had beautiful buildings, one of which seemed to be a temple.

So much interest did the story arouse, that it was immediately reprinted as a pamphlet, and 60,000 copies were sold in a month. Then it was republished in England, and translated into French and German, so that it soon spread over the civilized world. All this time Herschel himself, the great son of a still greater father, Sir William Herschel, was actually studying the heavens from South Africa. He had gone there the previous year, with his huge telescope, to observe stars not visible from England. With no fast mail, cables, or radio, he knew nothing about this abuse of his name until it was too late to stop it.

Later it proved that the author of the hoax was Richard Adams Locke, who became editor of the *Sun*, so little was his reputation affected. A French astronomer, Nicholas Nicollet, who had emigrated to the United States a few years before, has been charged with aiding him because of his animosity towards Francois Arago, another French astronomer who is said to have accepted the story at its face value. However, though Nicollet might have furnished some material, the bulk of it could hardly have been written by a man with his scientific training, and Locke must have the main credit, or blame, as the case may be!

Science News Letter, October 19, 1935

SOME ENIGMAS OF MODERN SCIENCE

by **Guy Clinton**

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FORESTRY

NATURE RAMBLINGS
by Frank Thone

Shelterbelts

SHELTERBELT planting on the Plains has gone on apace during the past season; the real test of this much-discussed project is on.

At this appropriate juncture a Russian forester speaks, a veteran of the first shelterbelt plantings on the steppes, made long before the War, who has lived to see the outcome of the experiments he helped to launch. He is Prof. G. N. Vyssotsky, of the Kharkov forest experiment station, and his observations have been translated out of the Russian for the Society of American Foresters by Oleg Maslenikov and M. Dobrotin, of Berkeley, Calif.

The notion of radically modifying dry-land climates by planting large masses of trees is definitely rejected by the veteran Russian forester. Although he himself first advanced the doctrine of forests "forwarding" rains in humid regions, by the more rapid evaporation taking place from their foliage, he disclaims it applicability to arid regions. If anything, forests there would have an opposite effect, he says; and at least in regions where the soil is porous afforestation tends to reduce stream flow.

Furthermore, he adds, "I came to the conclusion that a forest growing under such handicaps is not healthy; it degenerates eventually and becomes a breeding ground for countless parasites. . . In the U.S.S.R. we have given up planting forests in large bodies in the steppe regions."

Shelterbelt planting is a different matter, Prof. Vyssotsky emphasizes. Shelterbelts are regularly established features of the steppe land-use program.

"In general there is no doubt as to the beneficial effects of shelterbelts," he says. "Their snow-collecting capacity is of great importance to roads, farmsteads and settlements; they serve as protection from snowdrifts, blowing sand, and to some extent from dust as well as from strong winds. Likewise in some cases they can be used as a protection for cultivated areas; also for encircling ravines, so as to protect the plantations along the steeper slopes and keep the snow from being blown down into the valley."

It is as snow fences that shelterbelts seem to have served their most useful end, in Prof. Vyssotsky's opinion. They build high snowbanks among the trees themselves, thus encouraging the trees' own growth. And in the intervals between shelterbelts they make for a deeper and more uniform snow blanket over the fields—something much to be desired in windswept regions such as the steppes of eastern Europe and the plains of western America.

Science News Letter, October 19, 1935

PUBLIC HEALTH

Victory Over Two Plagues Is Reported From Sweden

A MAJOR triumph in disease fighting in Sweden, reported at the meeting of the American Public Health Association, has fired the enthusiasm of American health officers engaged in what seems like a hopeless fight against the same diseases.

Discovery of an absolutely sure way to prevent infantile paralysis would mean less to the health of this country than repetition of the Swedish achievement, Dr. Thomas Parran, New York State Health Commissioner, declared.

The triumph, reported by Dr. Einar Rietz, health commissioner of Stockholm, is the practical eradication in Sweden of the two venereal diseases, syphilis and gonorrhea. American health officers trying to accomplish the same results here must fight not only the disease but an antagonistic public opinion which largely forbids even the mention of the diseases by name. Yet these unmentionable plagues are the cause of more suffering and disability than any other communicable disease.

The point is that syphilis and gonorrhea are diseases as are typhoid fever, tuberculosis and yellow fever. They may be brought under control and practically wiped out by much the same methods that have eradicated yellow fever from this country and have brought so many other former plagues under control.

Using the familiar and trusty weapons of all disease fighting, the number of new cases of syphilis in Sweden has been reduced from six thousand a year to four hundred and thirty-one, Dr. Rietz reported. The population of Sweden is about the same as that of New York, outside of New York City. Best estimates of the number of new cases in New York State every year reach eleven thousand.

One feature of the Swedish method of handling the disease is provision of free medical and hospital care and medicine to any patient who has syphilis in the infectious stage. All patients must take treatment. Those who do not are subject to various penalties, including hard labor. Yet Dr. Rietz assured his American colleagues that personal liberty is safeguarded as carefully in Sweden as in the United States. Cases are reported to the health department without the patient's name. Sources of infection must be reported just as in the case of typhoid fever or any other communicable disease. Cases of syphilis are now so rare in Sweden that professors have difficulty in finding material to use in teaching medical students.

Encouraged by the Swedish experience, American health workers are hoping they will be given the opportunity to repeat the triumph over these two plagues in this country.

Science News Letter, October 19, 1935

The air conditioning system of the British steamship Queen Mary will be so arranged that passengers can personally control the temperature of staterooms.

RADIO

Tuesday, Oct. 22, 4:30 p. m., E.S.T.

THE LURE OF ARCHAEOLOGY, by Dr. N. C. Nelson, Curator of Prehistoric Archaeology, American Museum of Natural History.

Tuesday, October 29, 4:30 p. m. E.S.T.

APPLICATIONS OF RESEARCH IN THE PROTECTIVE COATING INDUSTRY, by Dr. H. J. Wing, a chemist of E. I. duPont de Nemours & Company.

In the Science Service series of radio addresses given by eminent scientists over the Columbia Broadcasting System.

•First Glances at New Books

Additional Reviews On Page 256

Psychology

A HANDBOOK OF GENERAL EXPERIMENTAL PSYCHOLOGY—Carl Murchison, Ed.—*Clark University Press,* 1137 p., $6. Many of the contributors to "Foundations of Experimental Psychology" are among the 20 authors of this new volume. Although it may seem somewhat technical to the lay reader, it is a reference book that every psychologist will want to own. The first section on "Adjustive Processes" contains two chapters on emotion, four on learning, one on heredity, and others of interest. The second part on "Receptive Processes" contains three chapters on vision, three on audition, one on "Chemoreception" and one on the pressure, pain, and temperature senses.

Science News Letter, October 19, 1935

Archaeology

DESIGNS ON THE PREHISTORIC POTTERY OF ARIZONA—Eleanor P. Clarke—*Univ. Arizona,* 76 p. 34 pl., $1. Following description of various pottery types, the author analyzes the patterns, finding that 50 design elements were used 705 times on the 220 pieces of pottery studied. A number of the illustrations are beautifully done in color.

Science News Letter, October 19, 1935

Biology

STUDENT'S MANUAL IN BIOLOGY—Frederick L. Fitzpatrick and Ralph E. Horton—*Houghton Mifflin,* 155 p., 48c.

Science News Letter, October 19, 1935

Zoology

A NEW AND IMPORTANT COPEPOD HABITAT—Charles B. Wilson — *Smithsonian Institution,* 13 p., 10c.

Science News Letter, October 19, 1935

Radio

RADIO FIELD SERVICE DATA—Alfred A. Ghirardi and Bertram M. Freed—*Radio & Technical Publishing Co.,* 240 p., $1.50. A compact companion volume to Modern Radio Servicing. Special attention is given to, and data provided for, the servicing of automobile radios.

Science News Letter, October 19, 1935

Natural History

FOOT PRINT SERIES: GIANTS OF THE ANIMAL KINGDOM, 23 p.; MONKEYS AND APES, 19 p.; STRANGE ANIMALS, 18 p.; WILD OXEN, 18 p.—H. B. Harte, $1.00 per set, plus postage; TEACHING MANUAL FOR ABOVE, 23 p., 10c plus postage. Well-printed, well-illustrated booklets for children, each equipped with an "Ortho-Scope" viewing screen for use with its two-color offset stereo-effect pictures.

Science News Letter, October 19, 1935

Air Travel

THE FLYING FAMILY IN GREENLAND—George R. Hutchinson—*Crowell,* 297 p., $2. Not many children are so highly privileged (in both literal and figurative senses!) as the two little girls in this book, who were taken for a long flying trip up onto the frozen roof of the world by their adventurous parents. Even the planewreck that ended the flying, and for a while threatened to wipe out the whole party, becomes part of the adventure—once it is safely in the past.

Science News Letter, October 19, 1935

Botany

IDENTIFICATION KEY FOR THE SPRING FLOWERS OF NORTHEASTERN COLORADO—Ernest C. Smith—*B. & M. Printing Co., Fort Collins, Col.,* 43 p., 85c. A "key" for a limited habitat range, but the more useful since its particular territory is not as well covered as it might be by existing larger works.

Science News Letter, October 19, 1935

General Science

WORKBOOK MANUAL FOR FIRST YEAR SCIENCE—John C. Hessler and Henry C. Shoudy—*Benj. H. Sanborn & Co.,* 196 p., 80c.

Science News Letter, October 19, 1935

Engineering

A. S. T. M. STANDARDS ON ELECTRICAL INSULATING MATERIALS—*American Society for Testing Materials,* 311 p., $1.75.

Science News Letter, October 19, 1935

Physics

THE THEORY OF ATOMIC SPECTRA—E. U. Condon and G. H. Shortley—*Cambridge U. Press,* 441 p., $11. As physicists rush ahead with research and theory on the structure of the nucleus, the problems of outer parts of the atom as gleaned by studies of the line spectra are receiving less attention by the more eager and enterprising scientists. Prof. Condon and Dr. Shortley represent that group of physicists who feel that, "this interpretation (of the line spectra due to atoms) seems to us in a fairly closed and highly satisfactory state." Their comprehensive book collects and interprets the present "closed" state of the field. Certainly quantum mechanics explains a great majority of the phenomena connected with line spectra. But one may add the hope that the authors will not have to retract their views as did self-satisfied physicists of the 1890's who felt there were no more worlds to conquer and then found the phenomena of X-rays, radioactivity and cosmic rays.

Science News Letter, October 19, 1935

Medicine

NEW AND SUPPLEMENTARY FACTS AND FIGURES ABOUT TUBERCULOSIS—Comp. by Jessamine S. Whitney—*National Tuberculosis Assn.,* 46 p., 50c.

Science News Letter, October 19, 1935

Medicine

STATE HOSPITALS IN THE DEPRESSION: A SURVEY OF THE EFFECTS OF THE ECONOMIC CRISIS ON THE OPERATION OF INSTITUTIONS FOR THE MENTALLY ILL IN THE UNITED STATES—Paul O. Komora, Mary A. Clark and Ralph A. Pierson—*National Comm. for Mental Hygiene, Inc.,* 126 p., 50c. (Price not given in SNL listing of Aug. 10).

Science News Letter, October 19, 1935

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Additional Reviews On Page 255

Anthropology

ANTHROPOLOGY IN ACTION — G. Gordon Brown and A. McD. Bruce Hutt —*Oxford Univ. Press,* 272 p., map, $2.75. Taking a Bantu tribe of Tanganyika as subjects, an anthropologist and a British District Officer tested out what anthropological information is actually useful to government agents. The authors describe their work clearly. Their suggestions and recommendations should be helpful to others who are attempting to use anthropology as an "applied" science.

Science News Letter, October 19, 1935

Entomology

CITIES OF WAX—Julie Closson Kenly *Appleton-Century,* 250 p., $2.50. Vigorously written, spiced with bits of humor and homely figures of speech, full of lively movement as the beehive itself, this book about bees will educate in the ways of the insect man befriends (and exploits) many a reader who would pass up a formal work on the subject as being too humdrum.

Science News Letter, October 19, 1935

Botany

AMERICAN FERNS: HOW TO KNOW, GROW AND USE THEM—Edith A. Roberts and Julia R. Lawrence—*Macmillan,* 98 p., $2.50. This fern book is written from the home gardener's viewpoint, but with the solid background of ecology necessary for success with these plants. The halftone illustrations, both of botanical habit and of propagation methods from spores onward, are excellent, and the fern "time table" will be valuable to any one planning fern plantings.

Science News Letter, October 19, 1935

Psychology

RACE DIFFERENCES—Otto Klineberg —*Harper & Bros.,* 367 p., $2.50. No scientific proof of racial differences in mentality has yet been found, is this author's conclusion. A large amount of research done by various scientists is appraised in this volume, and the question of race differences is considered not only from the psychological angle, but also the cultural and biological.

Science News Letter, October 19, 1935

Technology

WOOD HANDBOOK—R. F. Luxford, G. W. Trayer and others—*Government Printing Office,* 325 p., 6 pl., 25c. A compact but complete handbook, indispensable to any one who works with wood in any way. It treats of such diverse phases of wood use as woodworking, construction details, insect damage and its prevention, fire resistance treatments, preservatives, nails and other timber fastenings, paints—practically any question you may want to ask about wood will be answered, at least in its essential points, in this bulletin. The staff of the U. S. Forest Products laboratory have good right to be proud of this publication.

Science News Letter, October 19, 1935

History

AN ATLAS OF EUROPEAN HISTORY FROM THE 2ND TO THE 20TH CENTURY —J. F. Horrabin—*Knopf,* 146 p., 70 maps, $1.50. History is told in this instance by the device of showing map after map and telling briefly how the picture of Europe changed due to the great wars, migrations, revolutions and other upheavals. The book is especially intended to show the background explaining current problems of European diplomacy and politics.

Science News Letter, October 19, 1935

Paleobotany

STARUNIA: No. 6. NAJAS IN THE POLISH DILUVIUM—M. Gawlowska, 13 p., 2 pl.; No. 7. STUDIES ON DILUVIAL PLANT REMAINS OF THE FAMILY *Nymphaeaceae*—Andrezej Srodon, 10 p., 1 pl.—*Polish Academy of Sciences.* Studies of plant remains from the Quaternary of Poland.

Science News Letter, October 19, 1935

Hydrography

GEOLOGY AND GROUND-WATER RESOURCES OF THE ISLAND OF OAHU, HAWAII—Harold T. Stearns and Knute N. Vaksvik—*U. S. Geological Survey,* 479 p., 33 plates, Free. If requested through Science Service please enclose 10c handling charge.

Science News Letter, October 19, 1935

Entomology

REVIEW OF THE GENUS CHLAENOBIA BLANCHARD — Edward A. Chapin — *Smithsonian Inst.,* 20 p., 10c.

Science News Letter, October 19, 1935

Geography-Zoology

OVER AFRICAN JUNGLES — Martin Johnson — *Harcourt, Brace,* 263 p., $3.75. Martin Johnson again brings the jungle to your easy-chair, as he well knows how. The illustrations are as clean-cut and vigorous as the text.

Science News Letter, October 19, 1935

Naval Engineering

INVENTING THE SHIP—S. C. Gilfillan —*Follett,* 294 p., $2.50. A small book, but packed with closely documented information, well illustrated, vigorously written. Among other interesting bits of history is the fact that a Roosevelt in 1814 patented a paddlewheel steamboat and was probably responsible for the adoption of paddlewheel propulsion by Fulton—to whom, incidentally, the author thinks altogether too much credit is given in the popular American *mythos* of steam navigation.

Science News Letter, October 19, 1935

Hobbies

HOW TO RIDE YOUR HOBBY — A. Frederick Collins — *Appleton-Century,* 298 p., $2. Mr. Collins heartily believes in the motto, a hobby for every one, and he can—and does—tell his readers exactly how to start riding dozens of the beasties. He describes materials for starting, what knowledge may be necessary if the hobby is to be a success, and suggests what riding a particular hobby may do for an individual, in bringing fun, diversion, and specialized knowledge to his door. Hobbies lined up for inspection range from coin collecting, rock gardening, and telescope making to hand weaving, taking X-ray photographs, and starting a mousery.

Science News Letter, October 19, 1935

Conservation

THE LIVING WILDERNESS, VOL. I. No. 1—*R. S. Yard, Editor*—1840 Mintwood Pl., Washington, D. C. This new journal is the official publication of the recently organized Wilderness Society, whose objective is to secure the preservation of as many true wilderness areas as possible in their virgin condition, particular stress being laid on abstention from road building for auto traffic.

Science News Letter, October 19, 1935

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